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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,037	11/05/2001	Dominique Plee	33808F157	8635
7590 04/22/2004			EXAMINER	
Smith Gambrell & Russell 1850 M Street NW Suite 800 Washington, DC 20036			NGUYEN, TAM M	
			ART UNIT	PAPER NUMBER
			1764	
DATE MAILED: 04/22/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/914,037

**Applicant(s)**

PLEE ET AL.

**Examiner**

Tam M. Nguyen

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 8-13, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 and 14-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-13, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

The rejection of claims 8-12 under the judicially created doctrine of obviousness-type double patenting as being unpatenable over claims 1, 3, 7-12 of U.S. Patent No. 6,410,815 is withdrawn by the examiner in view of the amendment filed on December 31, 2003.

The rejection of claims 8-12 under 35 USC § 103 is withdrawn by the examiner in view of the amendment filed on December 31, 2003.

A new final rejection follows.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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Claims 8-10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosback (3,960,774) in view of Neuzil et al. (3,558,732) and Moreau (5,919,287) or Plee (6,652,626).

Rosback discloses a process for separating para-xylene from a mixture of C<sub>8</sub> aromatic hydrocarbons by contacting the mixture with an adsorbent comprising zeolite X with a silica/alumina ratio of about 2.5 (Si/Al: 1.25). The adsorbed para-xylene is removed from the adsorbent by using a desorbent. It is noted that Rosback does not specifically disclose that at least 90% of the exchangeable cationic sites of the zeolite are occupied by barium ions alone or barium and potassium ions wherein the exchangeable sites occupied by potassium represent up to 1/3 of the exchangeable sites occupied by barium + potassium. However, Rosback discloses that the exchangeable cationic sites are **essentially completely exchanged** of the sodium cations with barium or barium and potassium in a **weight ratio of 1.5 to 200** wherein the terms “essentially completely exchanged” means less than 2% and preferably less than 1% by weight of sodium in the zeolite. Therefore, the examiner’s position is that the limitation (at least 90% and occupied by 1/3) is inherent in the Rosback adsorbent. (See abstract; col. 2, line 42; col. 3, lines 28-36; col. 7, lines 10-44; col. 7, line 11 through col. 8, line 38; col. 9, lines 24-41)

Claims 8 and 12:

Rosback does not specifically disclose that the Dubinin volume is greater than or equal to 0.24 cm<sup>3</sup>/g. However, The Dubinin volume is a parameter that describes the microporous volume. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Rosback by using an absorbent having the claimed Dubinin volume because an increase in the microporous volume (e.g., .25 cm<sup>3</sup>/g) of

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the adsorbent would result in an increase in adsorption capacity which in turn would improve adsorbent productivity.

Claims 8, 12, 19 and 20:

Rosback does not disclose the step of clay undergoing zeolitization.

Moreau and Plee disclose a process for converting a clay binder into a zeolite wherein the binder is selected from the group consisting of kaolinite. (See Moreau, col. 3, lines 44-67; see Plee, col. 2, lines 48-65)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Rosback by converting the binder into zeolite as taught by either Moreau or Plee because Plee discloses that it is advantageous to convert the binder into zeolite.

Claims 8 and 12:

Rosback does not specifically disclose that the adsorption process occurs in the presence of a desorbent.

Neuzil discloses an adsorption process of para-xylene wherein the adsorption step is operated in the presence of a desorbent (see Neuzil; col. 2, lines 47-57).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Rosback by operating the adsorption process in the presence of a desorbent as taught by Neuzil because it is effective to operate the adsorption process in the presence of a desorbent.

Claims 9 and 10:

The adsorption process is a simulated moving bed countercurrent operation. (See Rosback; col. 2, lines 42)

Claim 12:

The adsorption process is operated in the gas phase. (See Rosback; col. 3, lines 1-6)

Claim 13:

The desorbent is toluene. (See Rosback; col. 3, lines 45-48)

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosback (3,960,774) and Neuzil et al. (3,558,732) Moreau (5,919,287) or Plee (6,652,626) further in view of Schmidt (4,642,406).

Both Rosback and Neuzil do not disclose that the process is operated in a simulated cocurrent fashion. However, Schmidt discloses that an adsorption process of para-xylene can be operated in either a simulated countercurrent mode or a simulated cocurrent mode (see Schmidt; col. 11, line 59 through col. 12, line 17). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Rosback/Neuzil by operating the process in a cocurrent mode because a simulated cocurrent mode has an equivalent function as a simulated countercurrent mode.

### ***Response to Arguments***

The argument that neither Rosback nor Neuzil teaches the use of zeolitized clay in the adsorbents is persuasive. However, as discussed above, Plee discloses that it is advantageous to convert binder into zeolite. Consequently, the modified process of Rosback would provide the

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same purity of para-xylene while increasing the flow rate of the feedstock as discussed by applicant.

The argument that Schmidt does not teach the use of zeolitized clay is not persuasive because the Schmidt reference was relied upon to teach that an adsorption process of para-xylene can be operated in either a simulated countercurrent mode or a simulated cocurrent mode. The examiner relies upon the Moreau and Plee references to teach the step of converting binder into zeolite.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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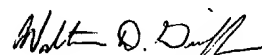
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tam M. Nguyen  
Examiner  
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TN



**Walter D. Griffin**  
**Primary Examiner**